

REMARKS

Applicants submit an Excess Claim Fee Payment Letter for One (1) additional dependent claim.

Claims 1-31 are all the claims presently pending in the application. Claims 1-30 have been amended to more particularly define the invention. Claim 31 has been added to claim additional features of the invention. Claims 4-10 and 19-25 have been withdrawn as being un-elected.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph. Claims 1-3 and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by WANMAKER, et al. (U.S. Patent No. 3,925,239). Claims 11, 13-15, 17, 18, 26, 29, and 30 stand rejected under 35 U.S.C. § 103(a) as being anticipated by WANMAKER in view of TASKAR et al. (U.S. Patent No. 6,734,465). Claims 16 stands rejected under 35 U.S.C. § 103(a) as being anticipated by WANMAKER in view of PELKA et al. (U.S. Patent Publication Application No.: 2003/0085642). Claims 27 stands rejected under 35 U.S.C. § 103(a) as being anticipated by WANMAKER in view of TASKAR and YOO et al. (U.S. Patent Publication Application No.: 2004/0169181). Claims 28 stands rejected under 35 U.S.C. § 103(a) as being anticipated by WANMAKER in view of TASKAR and DUGGAL et al. (U.S. Patent No.: 6,700,322).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention, as exemplified by claim 1, is directed to a phosphor for converting ultraviolet light or blue light emitted from a light emitting element into a visible white radiation, including a light emitting component selected from a group including an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate, a manganese(IV)-activated compound, the manganese (IV)-activated compound selected from a group including of an antimonate, a titanate, a silicate-germanate, and an aluminate, a europium-activated silicate-germanate, a sensitizer selected from a group including an Eu(II) and Mn(II) as a secondary activator and having an orange color, an orange-red color, a red color, or a dark red color in a spectrum range over 600 nm, and a mixture of eight or less light emitting components having different emission bands and brought to a state of broad continuous emission of about 380 to 780 nm, the mixture having a color temperature of about 10,000 K with blue-white color to 6,500 K with daylight color and having a color temperature of about 3,000 K with warm white color to 2,000 K with twilight color of reddish yellow by virtue of the superposition of the emission bands.

In conventional phosphors, the color rendering index Ra may be disadvantageously as low as 89 to 90, the necessary broadband red component and other light emitting component may be absent, and may not have long-term stability. (See Application at page 3, lines 6-18).

The claimed invention, on the other hand, may produce light having color rendering properties close to those in natural light or incandescent lamp light, and a color rendering index Ra above 90, and may emit a visible white radiation having a high level of color rendering properties. (See Application at page 3, line 19-page 4, line 5).

II. THE 35 USC §112, SECOND PARAGRAPH REJECTION

Claims 1 and 2 stand rejected under 35 U.S.C. §112, second paragraph. The claims have been amended, above, to overcome this rejection.

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. THE PRIOR ART REFERENCE

A. The Rejections Based on Wanmaker

The Examiner alleges that Wanmaker teaches the claimed invention as recited by claims 1-3 and 12. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Wanmaker.

Claim 1 recites, inter-alia, "a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate."

The Examiner attempts to equate Wanmaker's "luminescent" as the "the light emitting component" of the claimed invention. (Office Action, page 3, line 14). However, Wanmaker's "luminescent" refers to the luminescent alkaline earth halophosphate, (Abstract, lines 1-2; column 1, lines 1-2), which is a completely different chemical compound from an "alkaline earth metal antimonate" of the claimed invention. Therefore, Wanmaker fails to teach or suggest, "a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate."

Applicants note that while Wanmaker teaches that gaseous antimony is formed by heating a mixture which comprises an antimonite of one or more of the alkaline earth metals, or cadmium or of manganese, or of a mixture which comprises an antimonate of one or more

of the alkaline earth metals, (Abstract, lines 12-17), Wanmaker teaches that antimony merely acts to activate the luminescent alkaline earth halophosphate. (Column 1, lines 1-3; Column 3, lines 14-16). Wanmaker fails to teach or suggest that the antimony may itself be “a light emitting component” of the claimed invention. That is, Wanmaker fails to teach or suggest that antimony may emit light.

Also, the Examiner alleges that Wanmaker teaches the fluorantimonate of the claimed invention. (Office Action, page 4, line 1). The Applicants respectfully submit, however, that the Examiner erred by citing Wanmaker’s teachings out-of-context. That is, Wanmaker merely teaches that the host lattice of these halophosphates may be represented by the general formula $M_{10}(PO_4)_6X_2$, in which, ...X represents at least one of the halogens chlorine or fluorine. Here, fluorine is described only as a component of the halophosphate compound, which is a completely different compound from the alkaline earth metal antimonate. Therefore, Wanmaker also fails to teach or suggest the “comprising a fluoroantimonate” of the claimed invention.

Since there are elements of the claimed invention that are not taught or suggested by Wanmaker, the Examiner is respectfully requested to reconsider and withdraw this rejection.

B. The Rejections Based on Wanmaker and Taskar

The Examiner alleges that Wanmaker, when combined with Taskar, renders obvious claims 11, 13-15, 17-18, 26, 29, and 30. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Wanmaker fails to teach or suggest claim 1’s features, “a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a

fluoroantimonate.” from which claims 12 and 13 depend. Taskar also fails to remedy Wanmaker’s deficiencies.

The Examiner does not even allege, and Taskar fails to teach or suggest, “a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate.” Instead, the Examiner merely alleges that Taskar teaches a phosphor having a very high level of color rendering properties. (Office Action, page 8, lines 4-5).

Independent claims 14 and 15 recite similar features as those recited by claim 1.

Since there are elements of the claimed invention that are not taught or suggested by Wanmaker or Taskar, the Examiner is respectfully requested to reconsider and withdraw this rejection.

C. The Rejections Based on Wanmaker and Pelka

The Examiner alleges that Wanmaker, when combined with Pelka, renders obvious claim 16. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Wanmaker fails to teach or suggest claim 1’s features, “a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate.” Independent claim 16 recites similar features as those recited by claim 1.

The Applicants point out that Pelka also fails to remedy Wanmaker’s deficiencies.

That is, the Examiner does not even allege, and Pelka fails to teach or suggest, “a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate.” Instead,

the Examiner merely alleges that Pelka teaches an LED lamp, a light guiding part, and a wavelength converting part. (Office Action, page 13, lines 15-19).

Since there are elements of the claimed invention that are not taught or suggested by Wanmaker or Pelka, the Examiner is respectfully requested to reconsider and withdraw this rejection.

D. The Rejections Based on Wanmaker, Taskar, and Yoo

The Examiner alleges that Wanmaker, when combined with Taskar and Yoo, renders obvious claim 27. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Wanmaker and Taskar fail to teach or suggest claim 15's features, "a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate," from which claim 27 depends. Yoo also fails to remedy Wanmaker's deficiencies.

The Examiner does not even allege, and Yoo fails to teach or suggest, "a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate." Instead, the Examiner merely alleges that Yoo teaches that a phosphor is a thin-film phosphor layer that is sealed with said light transparent glass. (Office Action, page 14, lines 12-17).

Since there are elements of the claimed invention that are not taught or suggested by Wanmaker, Taskar, and Yoo, the Examiner is respectfully requested to reconsider and withdraw this rejection.

E. The Rejections Based on Wanmaker, Taskar, and Duggal

The Examiner alleges that Wanmaker, when combined with Taskar and Duggal, renders obvious claim 28. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

As discussed previously, Wanmaker and Taskar fail to teach or suggest claim 15's features, "a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate," from which claim 28 depends. Duggal also fails to remedy Wanmaker's deficiencies.

The Examiner does not even allege, and Duggal fails to teach or suggest, "a light emitting component selected from a group consisting of an alkaline earth metal antimonate or a derivative of the alkaline earth metal antimonate comprising a fluoroantimonate." Instead, the Examiner merely alleges that Duggal teaches that a phosphor layer is planar. (Office Action, page 15, lines 10-12).

Since there are elements of the claimed invention that are not taught or suggested by Wanmaker, Taskar, and Duggal, the Examiner is respectfully requested to reconsider and withdraw this rejection.

IV. NEW CLAIMS

New claim 31 is added to claim additional features of the invention and to provide more varied protection for the claimed invention. Support for the claim may be found on at least pages 18-19 of the specification. The claims are independently patentable because of the novel and non-obvious features recited therein.

Claim 31 is patentable over any combination of the cited references at least based on similar reasons to those set forth above with respect to claims 1-3.

V. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-31, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: _____

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